

Technical Data Sheet

DOWSIL™ 982-FS Silicone Insulating Glass Sealant

Features & Benefits

- Two-part, neutral cure, RTV silicone sealant
- Cures to form a durable, long-lasting, high-modulus, flexible, weather-tight bond
- Structural secondary sealant capability¹
- Unprimed adhesion to glass and metal substrates, such as stainless steel and aluminum
- Adhesion to heat mirror films
- Non slump, permitting automated glazing
- 12 month shelf life from date of manufacture
- Noncorrosive byproducts
- Low shrinkage (< 5 percent)
- Meets ASTM C-1369 Specification for Structurally Glazed Insulating Glass Units

¹For IG units used in structural glazing applications it is the responsibility of the Insulating Glass Manufacturer to size the sightline per appropriate industry accepted load sharing methods.

Applications

- DOWSIL™ 982-FS Silicone Insulating Glass Sealant is intended for use as a secondary sealant in dual-sealed insulating glass (IG) units (see Figure 1). A primary seal, typically polyisobutylene mastic (PIB), is required to prevent moisture vapor from transmitting into the airspace as well as retain gasses, such as argon, in the IG unit. When used in IG unit fabrication, DOWSIL 982-FS Silicone Insulating Glass Sealant bonds to typical IG substrates and completes a weather-resistant unit capable of meeting the ASTM E-2190 specification which is a requirement of NRFC 706 certification.
- Can be used as a secondary insulating glass sealant for structurally attached IG units. In the event that the sealant is used in this application it is the IG manufacturers' responsibility to ensure suitability and conduct the structural bite calculations using industry accepted load sharing methods.
- Can be used as the insulating glass sealant for the manufacture of IG units with captured Heat Film technologies.

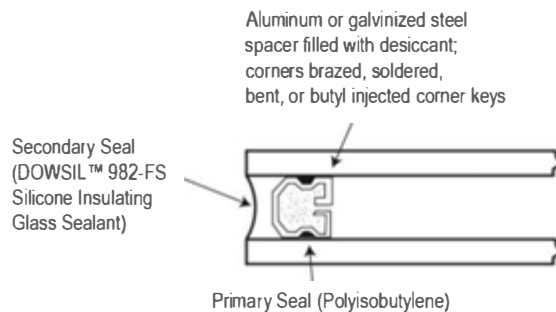


Figure 1:
Dual Seal Type

Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

Test ¹	Property	Unit	Result
As Supplied - DOWSIL™ 982-FS Silicone Insulating Glass Sealant - Base			
	Color		White
	Physical Form		Paste
ASTM D 1475	Specific Gravity		1.36
As Supplied – DOWSIL™ 982-FS Silicone Insulating Glass Sealant - Black Curing Agent			
	Color		Black
	Physical Form		Pourable liquid
ASTM D 1475	Specific Gravity		1.06
As Supplied – DOWSIL™ 982-FS Silicone Insulating Glass Sealant - Gray Curing Agent			
	Color		Gray
	Physical Form		Pourable liquid
ASTM D1475	Specific Gravity		1.00
As Catalyzed – Mixed at 9:1 Base-to-Curing Agent by Volume			
	Working Time	minutes	10–25
ASTM D 2202	Flow/Sag (Slump)	inches (mm)	< 0.2 (< 5.1)
	VOC Content ^{2,3}	g/L	< 18
As Cured – 7 Days at 25°C (77°F) and 50 percent Relative Humidity			
ASTM C 661	Durometer Hardness, Type A	points	35–45
ASTM D 412	Tensile Strength	psi (Mpa)	280 (2.0)
ASTM D 412	Elongation	percent	240
ASTM C1135	Ultimate Tensile Strength	psi (MPa)	150 (1.1)
ASTM C1135	Ultimate Elongation	%	110
Specifications			
ASTM C1369	Structural Silicone Sealant Specification		passes

1. ASTM: American Society for Testing and Materials.
2. VOC is based on South Coast Air Quality Management District of California. Maximum VOC is listed both inclusive and exclusive of water and exempt compounds.
3. Depending on mixing ratio.

Description

DOWSIL 982-FS Silicone Insulating Glass Sealant is a two-part silicone formulation. As supplied, the base is a smooth, white paste. The curing agent is available in black or gray and is a pourable liquid. Once catalyzed, the material cures to a high modulus, silicone rubber that is intended for IG applications, including IG units for heat mirror applications and IG units which will be structurally glazed.

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Description (Cont.) DOWSIL 982-FS Silicone Insulating Glass Sealant features:

- Unprimed adhesion to most common IG substrates and heat mirror films
- A physical property profile that is sufficient for IG secondary sealant applications
- A noncorrosive by-product
- Excellent weatherability, durability and recovery after repeated extension and compression up to 25%.

DOWSIL 982-FS Silicone Insulating Glass Sealant is supplied in 2 separate components. As a custom feature for the customer, the cure rate may be adjusted by changing the base to curing agent mix ratio between 8:1 and 10:1 by volume. Sealant physical properties do not significantly altered over this range. Environmental changes such as temperature and humidity will affect product working time. Colder temperatures will slow cure rate and adhesion development. See Table I for weigh equivalents to volumetric ratios.

Table 1: Width Equivalents of Volumetric Mixing Ratios

Volume Ratio	Equivalent Weight Ratio	
	Black Curing Agent	Curing Agent Gray
8:1 to 10:1	10.3:1 to 13:1	11.1:1 to 13.5 :1

How To Use

Design Considerations

Insulating glass units intended for conventional dry glazing or residential window applications should be designed with the secondary sealant dimensions in accordance with the “Sealant Manufacturers Minimum Sealant Dimensions and Placement Survey” distributed by IGMA, TB-1201-89(05).

Insulating glass units intended for structural silicone glazing applications should contain secondary sealant depths as determined by industry accepted standards such as trapezoidal load distribution rules and load sharing principles.

Adhesion and compatibility should be evaluated prior to sealant use. If requested, Dow may provide assistance in performing adhesion testing to coated glass¹, spacer surfaces or heat mirror films prior to using DOWSIL 982-FS Silicone Insulating Glass Sealant.

Heat Mirror Film Applications

Ensure sealant has attained sufficient cure and adhesion build prior to processing IG units in high temperature ovens. Follow procedures established by heat mirror film suppliers.

Surface Preparation

Before using this product, clean all surfaces, removing all foreign matter and contaminants, such as grease, oil, dust, water, frost, surface dirt, old sealants or glazing compounds and protective coatings.

Clean all metal, glass and plastic surfaces by mechanical or solvent methods. Always wipe solvents on and off with clean oil- and lint-free cloths².

¹Some coatings may require edge deletion for optimal long term system performance. Contact your glass supplier for recommendations.

²Follow solvent manufacturers recommended safe handling instructions and applicable federal state and local laws

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How To Use (Cont.)

Mixing

To obtain optimal physical properties, DOWSIL 982-FS Silicone Insulating Glass Sealant – Base and DOWSIL 982-FS Silicone Insulating Glass Sealant - Curing Agent should be thoroughly mixed using standard two - part dispensing and mixing equipment. DOWSIL 982-FS Silicone Insulating Glass Sealant is compatible with commonly used commercial 2 - part silicone dispensing equipment. Neither hand mixing nor mechanical mixing will produce satisfactory results.

Because of its reactivity with atmospheric moisture, DOWSIL 982-FS Curing Agent should not be exposed to air for prolonged periods.

During shutdown of mixing equipment, dispensing and mixing lines require purging with uncatalyzed base to minimize cured sealant buildup in lines and static mixing elements.

Lot matching of base and catalyst containers is not required.

Testing

Dow recommends several in-house quality control tests to ensure optimum sealant performance. These tests include:

- Butterfly test to ensure proper mixing
- Snap Time or Cure Test to ensure expected sealant cure rate at proper mix ratio
- Tab adhesion test to ensure proper sealant adhesion to production surfaces

These tests should be performed every time lots of base or curing agent are changed, or at the start of every shift or production run. Specific procedures for these recommended tests are available in the Insulating Glass Technical Manual.

Tooling

To obtain optimum adhesion, joints should be tooled immediately after sealant application. Questions about the use of DOWSIL 982-FS Silicone Insulating Glass Sealant can be answered by calling the Business Center.

Handling Precautions

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW WEBSITE AT WWW.CONSUMER.DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

Usable Life And Storage

DOWSIL 982-FS Silicone Insulating Glass Sealant should be stored in closed, airtight containers at or below 27°C (80°F). Both the base and the curing agent have a shelf life of 12 months from date of manufacture. Refer to product packaging for "Use By" date.

Packaging Information

DOWSIL 982-FS Silicone Insulating Glass Sealant – Base and DOWSIL 982-FS Silicone Insulating Glass Sealant - Curing Agent are packaged separately.

DOWSIL 982-FS Silicone Insulating Glass Sealant – Base is available in 183.8 L (48.5 gal) 250 kg (551 lb) lined, straight-sided drums.

DOWSIL 982-FS Silicone Insulating Glass Sealant - Curing Agent is available in 18 kg (39.6 lb) pails for black or 17 kg (37.5 lb) for gray.

Limitations

DOWSIL 982-FS Silicone Insulating Glass Sealant should not be applied:

- As a primary or single seal in an insulating glass unit
- To building materials that bleed oils, plasticizers or solvents – materials such as impregnated wood, oil-based caulks, green or partially vulcanized rubber gaskets and tapes
- On food contact surfaces – this product does not comply with FDA food additive regulations
- In below-grade or continuous water immersion applications.

Because of a potential for incompatibility, DOWSIL 982-FS Silicone Insulating Glass Sealant should not come in contact with, nor be exposed to, sealants that liberate acetic acid.

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

Health And Environmental Information

To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

For further information, please see our website, www.consumer.dow.com or consult your local Dow representative.

LIMITED WARRANTY INFORMATION – PLEASE READ CAREFULLY

The information contained herein is offered in good faith and is believed to be accurate. However, because conditions and methods of use of our products are beyond our control, this information should not be used in substitution for customer's tests to ensure that our products are safe, effective, and fully satisfactory for the intended end use. Suggestions of use shall not be taken as inducements to infringe any patent.

Dow's sole warranty is that our products will meet the sales specifications in effect at the time of shipment.

Your exclusive remedy for breach of such warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted.

TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, DOW SPECIFICALLY DISCLAIMS ANY OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY.

DOW DISCLAIMS LIABILITY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Dow will warrant that DOWSIL 982-FS Silicone Insulating Glass Sealant will maintain its flexibility and adhesion to glass and metal spacers in insulating glass units for a period of 10 years if the insulating glass manufacturer uses the product under the following conditions:

- Within its stated shelf life
- With compatible substrates
- With a base-to-curing agent mix ratio between 8:1 and 10:1 by volume
- According to Dow's recommendations for application and in accordance with Dow's recommended quality control procedures
- In an insulating glass unit that has been tested and has attained NFRC 706 certification

Warranty Limitations:

This warranty specifically excludes failure of the sealant due to:

- Natural causes such as lightning, earthquake, hurricane, tornado, fire, etc.
- Stress on the sealant which exceeds 20 psi
- Movement of the structure resulting in stresses on the sealant that exceed Dow's published specifications for elongation for the sealant, whether due to structural settlement, design error fabrication error or construction error
- Continuous immersion in water
- Disintegration of the underlying substrates such as Low-E coating corrosion, glass coating delamination or spacer corrosion
- Mechanical damage to the sealant caused by individuals, tools or other outside agents
- Changes in the appearance of the sealant from the accumulation of dirt or other contaminants deposited on the sealant from the atmosphere

Warranty Remedies:

In the event of a claim under this warranty, the insulating glass manufacturer must notify The Dow Chemical Company in writing within 30 days of the occurrence of the failure. Dow's sole liability shall be to furnish sufficient replacement material or refund of the purchase price of all material shown to be other than as warranted.

Any labor or other costs associated with the repairs are not the responsibility of Dow.

